SEQUENCE LISTING

<110> GOODEARL, ANDREW
STROOBANT, PAUL
MINGHETTI, LUISA
WATERFIELD, MICHAEL
MARCHIONNI, MARK
CHEN, MARIO S.
HILES, IAN

<120> GLIAL MITOGENIC FACTORS, THEIR PREPARATION AND USE

<130> 04585/00200R

<140> 08/734,592
<141> 1996-10-22

<150> 08/472,008
<151> 1995-06-06

<150> 08/036,555
<151> 1993-03-24

<150> 07/965,173
<151> 1992-10-23

<150> 07/940,389
<151> 1992-09-03

<150> 07/907,138
<151> 1992-06-30

<150> 07/863,703
<151> 1992-04-03

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<210> 1
<211> 8
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<400> 1
Phe Lys Gly Asp Ala His Thr Glu
1 5

<210> 2

<211> 13
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<213> Bos taurus

<220>
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<222> (1)...(12)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 12 is unknown.

<400> 2
Xaa Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Xaa Lys
1 5 10

<210> 3
<211> 12
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(10)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 10 is unknown

<400> 3
Xaa Thr Glu Thr Ser Ser Ser Gly Leu Xaa Leu Lys
1 5 10

<210> 4
<211> 9
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 4
Xaa Lys Leu Gly Glu Met Trp Ala Glu
1 5

<210> 5
<211> 7
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(1)

<223> Xaa in position 1 is Lysine or Arginine.

<400> 5
Xaa Leu Gly Glu Lys Arg Ala
1 5

<210> 6
<211> 16
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 6
Xaa Ile Lys Ser Glu His Ala Gly Leu Ser Ile Gly Asp Thr Ala Lys
1 5 10 15

<210> 7
<211> 13
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 7
Xaa Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Arg Lys
1 5 10

<210> 8
<211> 16
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 8
Xaa Ile Lys Gly Glu His Pro Gly Leu Ser Ile Gly Asp Val Ala Lys
1 5 10 15

<210> 9
<211> 13
<212> PRT

<213> Bos taurus

<220>
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<222> (1)...(12)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 12 is unknown.

<400> 9
Xaa Met Ser Glu Tyr Ala Phe Phe Val Gln Thr Xaa Arg
1 5 10

<210> 10
<211> 14
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 10
Xaa Ser Glu His Pro Gly Leu Ser Ile Gly Asp Thr Ala Lys
1 5 10

<210> 11
<211> 10
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(8)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 8 is unknown.

<400> 11
Xaa Ala Gly Tyr Phe Ala Glu Xaa Ala Arg
1 5 10

<210> 12
<211> 9
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(7)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 7 is unknown.

<400> 12
Xaa Lys Leu Glu Phe Leu Xaa Ala Lys
1 5

<210> 13
<211> 11
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine

<400> 13
Xaa Thr Thr Glu Met Ala Ser Glu Gln Gly Ala
1 5 10

<210> 14
<211> 10
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine

<400> 14
Xaa Ala Lys Glu Ala Leu Ala Ala Leu Lys
1 5 10

<210> 15
<211> 8
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine

<400> 15
Xaa Phe Val Leu Gln Ala Lys Lys
1 5

<210> 16
<211> 6
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine

<400> 16
Xaa Leu Gly Glu Met Trp
1 5

<210> 17
<211> 16
<212> PRT
<213> Bos taurus

<400> 17
Glu Tyr Lys Cys Leu Lys Phe Lys Trp Phe Lys Lys Ala Thr Val Met
1 5 10 15

<210> 18
<211> 10
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (8)...(8)
<223> Xaa in position 8 is unknown.

<400> 18
Glu Ala Lys Tyr Phe Ser Lys Xaa Asp Ala
1 5 10

<210> 19
<211> 7
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (2)...(2)
<223> Xaa in position 2 is unknown.

<400> 19
Glu Xaa Lys Phe Tyr Val Pro
1 5

<210> 20
<211> 26
<212> PRT
<213> Bos taurus

<400> 20
Glu Leu Ser Phe Ala Ser Val Arg Leu Pro Gly Cys Pro Pro Gly Val
1 5 10 15
Asp Pro Met Val Ser Phe Pro Val Ala Leu
20 25

<210> 21
<211> 2003
<212> DNA
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tttctgtggt tccatccact tcttcccccc cctcctccca taaacaactc tcctaccct 120
gcacccccaa taaataaata aaaggaggag ggcaaggggg gaggaggagg agtggtgctg 180
cgaggggaag gaaaagggag gcagcgcgag aagagccggg cagagtccga accgacagcc 240
agaagcccgc acgcacctcg cacc atg aga tgg cga cgc gcc ccg cgc cgc 291
Met Arg Trp Arg Arg Ala Pro Arg Arg
1 5

tcc ggg cgt ccc ggc ccc cgg gcc cag cgc ccc ggc tcc gcc gcc cgc 339
Ser Gly Arg Pro Gly Pro Arg Ala Gln Arg Pro Gly Ser Ala Ala Arg
10 15 20 25

tcg tcg ccg ccg ctg ccg ctg ctg cca cta ctg ctg ctg ctg ggg acc 387
Ser Ser Pro Pro Leu Pro Leu Leu Pro Leu Leu Leu Leu Leu Gly Thr
30 35 40

gcg gcc ctg gcg ccg ggg gcg gcg gcc ggc aac gag gcg gct ccc gcg 435
Ala Ala Leu Ala Pro Gly Ala Ala Ala Gly Asn Glu Ala Ala Pro Ala
45 50 55

ggg gcc tcg gtg tgc tac tcg tcc ccg ccc agc gtg gga tcg gtg cag 483
Gly Ala Ser Val Cys Tyr Ser Ser Pro Pro Ser Val Gly Ser Val Gln
60 65 70

gag cta gct cag cgc gcc gcg gtg gtc atc gag gga aag gtg cac ccg 531
Glu Leu Ala Gln Arg Ala Ala Val Val Ile Glu Gly Lys Val His Pro
75 80 85

cag cgg cgg cag cag ggg gca ctc gac agg aag gcg gcg gcg gcg gcg 579
Gln Arg Arg Gln Gln Gly Ala Leu Asp Arg Lys Ala Ala Ala Ala Ala
90 95 100 105

ggc gag gca ggg gcg tgg ggc ggc gat cgc gag ccg cca gcc gcg ggc 627
Gly Glu Ala Gly Ala Trp Gly Gly Asp Arg Glu Pro Pro Ala Ala Gly
110 115 120

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cca cgg gcg ctg ggg ccg ccc gcc gag gag ccg ctg ctc gcc gcc aac      675
Pro Arg Ala Leu Gly Pro Pro Ala Glu Glu Pro Leu Leu Ala Ala Asn
            125                 130                 135

ggg acc gtg ccc tct tgg ccc acc gcc ccg gtg ccc agc gcc ggc gag      723
Gly Thr Val Pro Ser Trp Pro Thr Ala Pro Val Pro Ser Ala Gly Glu
        140                 145                 150

ccc ggg gag gag gcg ccc tat ctg gtg aag gtg cac cag gtg tgg gcg      771
Pro Gly Glu Glu Ala Pro Tyr Leu Val Lys Val His Gln Val Trp Ala
    155                 160                 165

gtg aaa gcc ggg ggc ttg aag aag gac tcg ctg ctc acc gtg cgc ctg      819
Val Lys Ala Gly Gly Leu Lys Lys Asp Ser Leu Leu Thr Val Arg Leu
170                 175                 180                 185

ggg acc tgg ggc cac ccc gcc ttc ccc tcc tgc ggg agg ctc aag gag      867
Gly Thr Trp Gly His Pro Ala Phe Pro Ser Cys Gly Arg Leu Lys Glu
                190                 195                 200

gac agc agg tac atc ttc ttc atg gag ccc gac gcc aac agc acc agc      915
Asp Ser Arg Tyr Ile Phe Phe Met Glu Pro Asp Ala Asn Ser Thr Ser
            205                 210                 215

cgc gcg ccg gcc gcc ttc cga gcc tct ttc ccc cct ctg gag acg ggc      963
Arg Ala Pro Ala Ala Phe Arg Ala Ser Phe Pro Pro Leu Glu Thr Gly
        220                 225                 230

cgg aac ctc aag aag gag gtc agc cgg gtg ctg tgc aag cgg tgc gcc     1011
Arg Asn Leu Lys Lys Glu Val Ser Arg Val Leu Cys Lys Arg Cys Ala
    235                 240                 245

ttg cct ccc caa ttg aaa gag atg aaa agc cag gaa tcg gct gca ggt     1059
Leu Pro Pro Gln Leu Lys Glu Met Lys Ser Gln Glu Ser Ala Ala Gly
250                 255                 260                 265

tcc aaa cta gtc ctt cgg tgt gaa acc agt tct gaa tac tcc tct ctc     1107
Ser Lys Leu Val Leu Arg Cys Glu Thr Ser Ser Glu Tyr Ser Ser Leu
                270                 275                 280

aga ttc aag tgg ttc aag aat ggg aat gaa ttg aat cga aaa aac aaa     1155
Arg Phe Lys Trp Phe Lys Asn Gly Asn Glu Leu Asn Arg Lys Asn Lys
            285                 290                 295

cca caa aat atc aag ata caa aaa aag cca ggg aag tca gaa ctt cgc     1203
Pro Gln Asn Ile Lys Ile Gln Lys Lys Pro Gly Lys Ser Glu Leu Arg
        300                 305                 310

att aac aaa gca tca ctg gct gat tct gga gag tat atg tgc aaa gtg     1251
Ile Asn Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Cys Lys Val
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    315                 320                 325

atc agc aaa tta gga aat gac agt gcc tct gcc aat atc acc atc gtg      1299
Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala Asn Ile Thr Ile Val
330                 335                 340                 345

gaa tca aac gct aca tct aca tcc acc act ggg aca agc cat ctt gta      1347
Glu Ser Asn Ala Thr Ser Thr Ser Thr Thr Gly Thr Ser His Leu Val
                350                 355                 360

aaa tgt gcg gag aag gag aaa act ttc tgt gtg aat gga ggg gag tgc      1395
Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys
            365                 370                 375

ttc atg gtg aaa gac ctt tca aac ccc tcg aga tac ttg tgc aag tgc      1443
Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys
        380                 385                 390

cca aat gag ttt act ggt gat cgc tgc caa aac tac gta atg gcc agc      1491
Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser
    395                 400                 405

ttc tac agt acg tcc act ccc ttt ctg tct ctg cct gaa taggagcatg      1540
Phe Tyr Ser Thr Ser Thr Pro Phe Leu Ser Leu Pro Glu
410                 415                 420

ctcagttggt gctgctttct tgttgctgca tctcccctca gattccacct agagctagat   1600
gtgtcttacc agatctaata ttgactgcct ctgcctgtcg catgagaaca ttaacaaaag   1660
caattgtatt acttcctctg ttcgcgacta gttggctctg agatactaat aggtgtgtga   1720
ggctccggat gtttctggaa ttgatattga atgatgtgat acaaattgat agtcaatatc   1780
aagcagtgaa atatgataat aaaggcattt caaagtctca cttttattga taaaataaaa   1840
atcattctac tgaacagtcc atcttcttta tacaatgacc acatcctgaa aagggtgttg   1900
ctaagctgta accgatatgc acttgaaatg atggtaagtt aattttgatt cagaatgtgt   1960
tatttgtcac aaataaacat aataaaagga aaaaaaaaaa aaa                     2003
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<210> 22
<211> 12
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (11)...(11)
<223> Xaa in position 11 is unknown.

<400> 22

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Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Xaa Lys
 1               5                  10
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<210> 23
<211> 11

<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (9)...(9)
<223> Xaa in position 9 is unknown.

<400> 23
Thr Glu Thr Ser Ser Ser Gly Leu Xaa Leu Lys
1 5 10

<210> 24
<211> 12
<212> PRT
<213> Bos taurus

<400> 24
Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Arg Lys
1 5 10

<210> 25
<211> 9
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (7)...(7)
<223> Xaa in position 7 is unknown.

<400> 25
Ala Gly Tyr Phe Ala Glu Xaa Ala Arg
1 5

<210> 26
<211> 10
<212> PRT
<213> Bos taurus

<400> 26
Thr Thr Glu Met Ala Ser Glu Gln Gly Ala
1 5 10

<210> 27
<211> 9
<212> PRT
<213> Bos taurus

<400> 27
Ala Lys Glu Ala Leu Ala Ala Leu Lys

1 5

<210> 28
<211> 7
<212> PRT
<213> Bos taurus

<400> 28
Phe Val Leu Gln Ala Lys Lys
1 5

<210> 29
<211> 21
<212> PRT
<213> Bos taurus

<400> 29
Glu Thr Gln Pro Asp Pro Gly Gln Ile Leu Lys Lys Val Pro Met Val
1 5 10 15
Ile Gly Ala Tyr Thr
20

<210> 30
<211> 21
<212> PRT
<213> Homo sapiens

<220>
<221> UNSURE
<222> (1)...(19)
<223> Xaa in positions 1, 3, 17 and 19 is unknown.

<400> 30
Xaa Glu Xaa Lys Glu Gly Arg Gly Lys Gly Lys Gly Lys Lys Lys Glu
1 5 10 15
Xaa Gly Xaa Gly Lys
20

<210> 31
<211> 13
<212> PRT
<213> Homo sapiens

<400> 31
Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu
1 5 10

<210> 32
<211> 8
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (6)...(6)
<223> Xaa in position 6 is unknown.

<400> 32
Lys Leu Glu Phe Leu Xaa Ala Lys
1 5

<210> 33
<211> 9
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 33
Xaa Val His Gln Val Trp Ala Ala Lys
1 5

<210> 34
<211> 14
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(11)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in 11 is unknown.

<400> 34
Xaa Tyr Ile Phe Phe Met Glu Pro Glu Ala Xaa Ser Ser Gly
1 5 10

<210> 35
<211> 14
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(13)
<223> Xaa in 1 is Lysine or Arginine; Xaa in 13 is unknown.

<400> 35
Xaa Leu Gly Ala Trp Gly Pro Pro Ala Phe Pro Val Xaa Tyr

1 5 10

<210> 36
<211> 9
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 36
Xaa Trp Phe Val Val Ile Glu Gly Lys
1 5

<210> 37
<211> 16
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 37
Xaa Ala Ser Pro Val Ser Val Gly Ser Val Gln Glu Leu Val Gln Arg
1 5 10 15

<210> 38
<211> 13
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 38
Xaa Val Cys Leu Leu Thr Val Ala Ala Leu Pro Pro Thr
1 5 10

<210> 39
<211> 7
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE

<222> (1)...(6)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 6 is unknown.

<400> 39
Xaa Asp Leu Leu Leu Xaa Val
1 5

<210> 40
<211> 39
<212> PRT
<213> Bos taurus

<400> 40
Cys Thr Cys Gly Cys Cys Lys Cys Cys Arg Thr Thr Cys Ala Cys Arg
1 5 10 15
Cys Ala Gly Ala Ala Gly Gly Thr Cys Thr Thr Cys Thr Cys Cys Thr
20 25 30
Thr Cys Thr Cys Ala Gly Cys
35

<210> 41
<211> 24
<212> PRT
<213> Bos taurus

<400> 41
Cys Cys Thr Cys Gly Cys Thr Cys Cys Thr Thr Cys Thr Thr Cys Thr
1 5 10 15
Thr Gly Cys Cys Cys Thr Thr Cys
20

<210> 42
<211> 60
<212> DNA
<213> Homo sapiens

<400> 42
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<210> 43
<211> 36
<212> DNA
<213> Homo sapiens

<400> 43
agtacgtcca ctccctttct gtctctgcct gaatag 36

<210> 44
<211> 569
<212> DNA

<213> Homo sapiens

<400> 44

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ctgcatgacc gtcttcggca gagccttcgg tctgaacgaa acaatatgat gaacattgcc     180
aatgggcctc accatcctaa cccacccccc gagaatgtcc agctggtgaa tcaatacgta     240
tctaaaaacg tcatctccag tgagcatatt gttgagagag aagcagagac atccttttcc     300
accagtcact atacttccac agcccatcac tccactactg tcacccagac tcctagccac     360
agctggagca acggacacac tgaaagcatc ctttccgaaa gccactctgt aatcgtgatg     420
tcatccgtag aaaacagtag gcacagcagc ccaactgggg gcccaagagg acgtcttaat     480
ggcacaggag gcctcgtga atgtaacagc ttcctcaggc atgccagaga aacccctgat      540
tcctaccgag actctcctca tagtgaaag                                       569
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<210> 45
<211> 8
<212> PRT
<213> Bos taurus

<400> 45

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Val His Gln Val Trp Ala Ala Lys
 1               5
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<210> 46
<211> 13
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (10)...(10)
<223> Xaa in position 10 is unknown.

<400> 46

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Tyr Ile Phe Phe Met Glu Pro Glu Ala Xaa Ser Ser Gly
 1               5                   10
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<210> 47
<211> 13
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (12)...(12)
<223> Xaa in position 12 is unknown.

<400> 47

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Leu Gly Ala Trp Gly Pro Pro Ala Phe Pro Val Xaa Tyr
 1               5                   10
```

<210> 48
<211> 8
<212> PRT
<213> Bos taurus

<400> 48
Trp Phe Val Val Ile Glu Gly Lys
1 5

<210> 49
<211> 15
<212> PRT
<213> Bos taurus

<400> 49
Ala Ser Pro Val Ser Val Gly Ser Val Gln Glu Leu Val Gln Arg
1 5 10 15

<210> 50
<211> 12
<212> PRT
<213> Bos taurus

<400> 50
Val Cys Leu Leu Thr Val Ala Ala Leu Pro Pro Thr
1 5 10

<210> 51
<211> 9
<212> PRT
<213> Bos taurus

<400> 51
Lys Val His Gln Val Trp Ala Ala Lys
1 5

<210> 52
<211> 13
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (12)...(12)
<223> Xaa in position 12 is unknown.

<400> 52
Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Xaa Lys
1 5 10

<210> 53

<211> 6
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (5)...(5)
<223> Xaa in position 5 is unknown.

<400> 53
Asp Leu Leu Leu Xaa Val
1 5

<210> 54
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 54
ttyaarggng aygcncayac 20

<210> 55
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 55
catrtaytcr taytcrtcng c 21

<210> 56
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 56
tgytcngang ccatytcngt 20

<210> 57
<211> 20

<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 57
tgytcrctng ccatytcngt 20

<210> 58
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 58
ccdatnacca tnggnacytt 20

<210> 59
<211> 20
<212> DNA
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<220>
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<400> 59
gcngcccana cytgrtgnac 20

<210> 60
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
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<400> 60
gcytcnggyt ccatraaraa 20

<210> 61
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 61
ccytcdatna cnacraacca 20

<210> 62
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 62
tcngcraart anccngc 17

<210> 63
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
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<400> 63
gcngcnagng cytcyttngc 20

<210> 64
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 64
gcngcyaang cytcyttngc 20

<210> 65
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 65
ttyttngcyt gnagnacraa 20

<210> 66
<211> 20
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<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 66
ttyttngcyt gyaanacraa 20

<210> 67
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 67
tgnacnagyt cytgnac 17

<210> 68
<211> 17
<212> DNA
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<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 68
tgnacyaayt cytgnac 17

<210> 69
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 69
catrtaytcn ccngartcng c 21

<210> 70
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 70
catrtaytcn ccrctrtcng c 21

<210> 71
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
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<400> 71
ngartcngcy aangangcyt t 21

<210> 72
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
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<400> 72
ngartcngcn agngangcyt t 21

<210> 73
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 73
rctrtcngcy aangangcyt t 21

<210> 74
<211> 21
<212> DNA

<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 74
rctrtcngcn agngangcyt t 21

<210> 75
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 75
ngartcngcy aarctngcyt t 21

<210> 76
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 76
ngartcngcn agrctngcyt t 21

<210> 77
<211> 730
<212> DNA
<213> Homo sapiens

<400> 77
gtatgtgtca gccatgacca ccccggctcg tatgtcacct gtagatttcc acacgccaag 60
ctcccccaaa tcgccccctt cggaaatgtc tccacccgtg tccagcatga cggtgtccat 120
gccttccatg gcggtcagcc ccttcatgga agaagagaga cctctacttc tcgtgacacc 180
accaaggctg cgggagaaga agtttgacca tcaccctcag cagttcagct ccttccacca 240
caaccccgcg catgacagta acagcctccc tgctagcccc ttgaggatag tggaggatga 300
ggagtatgaa acgacccaag agtacgagcc agcccaagag cctgttaaga aactcgccaa 360
tagccggcgg gccaaaagaa ccaagcccaa tggccacatt gctaacagat tggaagtgga 420
cagcaacaca agctcccaga gcagtaactc agagagtgaa acagaagatg aaagagtagg 480
tgaagatacg cctttcctgg gcatacagaa ccccctggca gccagtcttg aggcaacacc 540
tgccttccgc ctggctgaca gcaggactaa cccagcaggc cgcttctcga cacaggaaga 600
aatccaggcc aggctgtcta gtgtaattgc taaccaagac cctattgctg tataaaacct 660
aaataaacac atagattcac ctgtaaaact ttattttata taataaagta ttccacctta 720

aattaaacaa 730

<210> 78
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 78
rctrtcngcy aarctngcyt t 21

<210> 79
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 79
rctrctngcn agrctngcyt t 21

<210> 80
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 80
acnacngara tggctcnnga 20

<210> 81
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 81
acnacngara tggcagynga 20

<210> 82

<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 82
caycargtnt gggcngcnaa 20

<210> 83
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 83
ttygtngtna thgarggnaa 20

<210> 84
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 84
aarggngayg cncayacnga 20

<210> 85
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 85
gargcnytng cngcnytnaa 20

<210> 86
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 86
gtnggntcng tncargaryt 20

<210> 87
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 87
gtnggnagyg tncargaryt 20

<210> 88
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 88
nacyttyttn ardatytgnc c 21

<210> 89
<211> 417
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (6)...(416)

<221> unsure
<222> (14)...(135)
<223> Xaa in positions 14, 23, 90, 100, 126, and 135 is unknown.

<400> 89
tctaa aac tac aga gac tgt att ttc atg atc atc ata gtt ctg nnn aat 50
Asn Tyr Arg Asp Cys Ile Phe Met Ile Ile Ile Val Leu Xaa Asn
1 5 10 15

ata ctt aaa ccg ctt tgg tcc nnn tct tgt agg aag tca gaa ctt cgc 98

```
Ile Leu Lys Pro Leu Trp Ser Xaa Ser Cys Arg Lys Ser Glu Leu Arg
                20                  25                  30

att agc aaa gcg tca ctg gct gat tct gga gaa tat atg tgc aaa gtg      146
Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Cys Lys Val
            35                  40                  45

atc agc aaa cta gga aat gac agt gcc tct gcc aac atc acc att gtg      194
Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala Asn Ile Thr Ile Val
        50                  55                  60

gag tca aac ggt aag aga tgc cta ctg cgt gct att tct cag tct cta      242
Glu Ser Asn Gly Lys Arg Cys Leu Leu Arg Ala Ile Ser Gln Ser Leu
    65                  70                  75

aga gga gtg atc aag gta tgt ggt cac act nnn atc acg cag gtg tct      290
Arg Gly Val Ile Lys Val Cys Gly His Thr Xaa Ile Thr Gln Val Ser
80                  85                  90                  95

gaa atc tca ttg nnn aca aat aaa aat cat gaa agg aaa act cta tgt      338
Glu Ile Ser Leu Xaa Thr Asn Lys Asn His Glu Arg Lys Thr Leu Cys
                100                 105                 110

ttg aaa tat ctt atg ggt cct cct gta aag ctc ttc act cca nnn ggt      386
Leu Lys Tyr Leu Met Gly Pro Pro Val Lys Leu Phe Thr Pro Xaa Gly
            115                 120                 125

gaa ata gac ctg aaa tat ata nnn att att t                           417
Glu Ile Asp Leu Lys Tyr Ile Xaa Ile Ile
        130                 135
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<210> 90
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (19)...(19)
<223> I

<221> modified_base
<222> (25)...(25)
<223> I

<221> modified_base
<222> (31)...(31)

<223> I

<400> 90
ccgaattctg caggaracnc arccngaycc ngg 33

<210> 91
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (14)...(14)
<223> I

<221> modified_base
<222> (20)...(20)
<223> I

<221> modified_base
<222> (23)...(23)
<223> I

<221> modified_base
<222> (29)...(29)
<223> I

<221> modified_base
<222> (35)...(35)
<223> I

<400> 91
aaggatcctg cagngtrtan gcnccdatna ccatngg 37

<210> 92
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (16)...(16)
<223> I

<221> modified_base

<222> (22)...(22)
<223> I

<221> modified_base
<222> (25)...(25)
<223> I

<400> 92
ccgaattctg caggcngayt cnggngarta yatg 34

<210> 93
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (16)...(16)
<223> I

<221> modified_base
<222> (25)...(25)
<223> I

<400> 93
ccgaattctg caggcngaya gyggngarta yat 33

<210> 94
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (14)...(14)
<223> I

<221> modified_base
<222> (15)...(15)
<223> I

<221> modified_base
<222> (16)...(16)
<223> I

<221> modified_base

<222> (26)...(26)
<223> I

<221> modified_base
<222> (29)...(29)
<223> I

<400> 94
aaggatcctg cagnnncatr taytcnccng artc 34

<210> 95
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (14)...(14)
<223> I

<221> modified_base
<222> (15)...(15)
<223> I

<221> modified_base
<222> (16)...(16)
<223> I

<221> modified_base
<222> (26)...(26)
<223> I

<400> 95
aaggatcctg cagnnncatr taytcnccrc trtc 34

<210> 96
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (22)...(22)
<223> I

<221> modified_base
<222> (28)...(28)

<223> I

<221> modified_base
<222> (31)...(31)
<223> I

<400> 96
ccgaattctg cagcaycarg tntgggcngc naa 33

<210> 97
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (31)...(31)
<223> I

<400> 97
ccgaattctg cagathttyt tyatggarcc ngarg 35

<210> 98
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (18)...(18)
<223> I

<221> modified_base
<222> (21)...(21)
<223> I

<221> modified_base
<222> (24)...(24)
<223> I

<221> modified_base
<222> (27)...(27)
<223> I

<221> modified_base
<222> (33)...(33)
<223> I

<400> 98
ccgaattctg cagggggncc nccngcntty ccngt 35

<210> 99
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (22)...(22)
<223> I

<221> modified_base
<222> (25)...(25)
<223> I

<400> 99
ccgaattctg cagtggttyg tngtnathga rgg 33

<210> 100
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (17)...(17)
<223> I

<221> modified_base
<222> (20)...(20)
<223> I

<221> modified_base
<222> (27)...(27)
<223> I

<400> 100
aaggatcctg cagyttngcn ngcccanacy tgrtg 35

<210> 101
<211> 33
<212> DNA
<213> Artificial Sequence

<220>

<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (19)...(19)
<223> I

<400> 101
aaggatcctg caggcytcng gytccatraa raa 33

<210> 102
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (16)...(16)
<223> I

<221> modified_base
<222> (22)...(22)
<223> I

<221> modified_base
<222> (25)...(25)
<223> I

<221> modified_base
<222> (28)...(28)
<223> I

<221> modified_base
<222> (31)...(31)
<223> I

<400> 102
aaggatcctg cagacnggra angcnggngg ncc 33

<210> 103
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (17)...(17)
<223> I

<221> modified_base
<222> (26)...(26)
<223> I

<221> modified_base
<222> (29)...(29)
<223> I

<400> 103
aaggatcctg cagyttnccy tcdatnacna craac 35

<210> 104
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (18)...(18)
<223> I

<400> 104
catrtaytcr taytctcngc aaggatcctg cag 33

<210> 105
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (19)...(19)
<223> I

<221> modified_base
<222> (25)...(25)
<223> I

<221> modified_base
<222> (31)...(31)
<223> I

<400> 105
ccgaattctg cagaarggng aygcncayac nga 33

<210> 106
<211> 33

<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (3)...(3)
<223> I

<221> modified_base
<222> (18)...(18)
<223> I

<400> 106
gcngcyaang cytcyttngc aaggatcctg cag 33

<210> 107
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (3)...(3)
<223> I

<221> modified_base
<222> (6)...(6)
<223> I

<221> modified_base
<222> (9)...(9)
<223> I

<221> modified_base
<222> (18)...(18)
<223> I

<400> 107
gcngcnagng cytcyttngc aaggatcctg cag 33

<210> 108
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (3)...(3)
<223> I

<221> modified_base
<222> (12)...(12)
<223> I

<221> modified_base
<222> (15)...(15)
<223> I

<400> 108
tcngcraart anccngcaag gatcctgcag 30

<210> 109
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 109
catcgatctg caggctgatt ctggagaata tatgtgca 38

<210> 110
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 110
aaggatcctg cagccacatc tcgagtcgac atcgatt 37

<210> 111
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 111
ccgaattctg cagtgatcag caaactagga aatgaca 37

<210> 112
<211> 37
<212> DNA

<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 112
catcgatctg cagcctagtt tgctgatcac tttgcac 37

<210> 113
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 113
aaggatcctg cagtatattc tccagaatca gccagtg 37

<210> 114
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 114
aaggatcctg caggcacgca gtaggcatct ctta 34

<210> 115
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 115
ccgaattctg cagcagaact tcgcattagc aaagc 35

<210> 116
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 116
catcccggga tgaagagtca ggagtctgtg gca 33

<210> 117
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 117
atacccgggc tgcagacaat gagatttcac acacctgcg 39

<210> 118
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 118
aaggatcctg cagtttggaa cctgccacag actcct 36

<210> 119
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 119
atacccgggc tgcagatgag atttcacaca cctgcgtga 39

<210> 120
<211> 12
<212> PRT
<213> Bos taurus

<400> 120
His Gln Val Trp Ala Ala Lys Ala Ala Gly Leu Lys
1 5 10

<210> 121
<211> 16
<212> PRT
<213> Bos taurus

<400> 121
Gly Gly Leu Lys Lys Asp Ser Leu Leu Thr Val Arg Leu Gly Ala Asn
1 5 10 15

<210> 122
<211> 13
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (12)...(12)
<223> Xaa in 12 is unknown.

<400> 122
Leu Gly Ala Trp Gly Pro Pro Ala Phe Pro Val Xaa Tyr
1 5 10

<210> 123
<211> 23
<212> PRT
<213> Bos taurus

<400> 123
Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro Ser
1 5 10 15
Cys Gly Arg Leu Lys Glu Asp
20

<210> 124
<211> 13
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (10)...(10)
<223> Xaa in 10 is unknown.

<400> 124
Tyr Ile Phe Phe Met Glu Pro Glu Ala Xaa Ser Ser Gly
1 5 10

<210> 125
<211> 23
<212> PRT
<213> Bos taurus

<400> 125
Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu Pro Glu Ala Asn Ser
1 5 10 15
Ser Gly Gly Pro Gly Arg Leu
20

<210> 126

<211> 14
<212> PRT
<213> Bos taurus

<400> 126
Val Ala Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser Ser
1 5 10

<210> 127
<211> 16
<212> PRT
<213> Bos taurus

<400> 127
Glu Tyr Lys Cys Leu Lys Phe Lys Trp Phe Lys Lys Ala Thr Val Met
1 5 10 15

<210> 128
<211> 26
<212> PRT
<213> Bos taurus

<400> 128
Cys Glu Thr Ser Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp Phe Lys
1 5 10 15
Asn Gly Ser Glu Leu Ser Arg Lys Asn Lys
20 25

<210> 129
<211> 13
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (12)...(12)
<223> Xaa in 12 is unknown.

<400> 129
Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Xaa Lys
1 5 10

<210> 130
<211> 23
<212> PRT
<213> Bos taurus

<400> 130
Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met
1 5 10 15
Cys Lys Val Ile Ser Lys Leu

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            20

      <210> 131
      <211> 12
      <212> PRT
      <213> Bos taurus

      <400> 131
Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Arg Lys
 1               5                  10

      <210> 132
      <211> 22
      <212> PRT
      <213> Bos taurus

      <400> 132
Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Cys
 1               5                  10                  15
Lys Val Ile Ser Lys Leu
            20

      <210> 133
      <211> 744
      <212> DNA
      <213> Bos taurus

      <220>
      <221> CDS
      <222> (8)...(625)

      <400> 133
cctgcag cat caa gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac       49
        His Gln Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp
         1               5                  10

tcg ctg ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc       97
Ser Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro
 15                  20                  25                  30

tcc tgc ggg cgc ctc aag gag gac agc agg tac atc ttc ttc atg gag      145
Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu
                35                  40                  45

ccc gag gcc aac agc agc ggc ggg ccc ggc cgc ctt ccg agc ctc ctt      193
Pro Glu Ala Asn Ser Ser Gly Gly Pro Gly Arg Leu Pro Ser Leu Leu
             50                  55                  60

ccc ccc tct cga gac ggg ccg gaa cct caa gaa gga ggt cag ccg ggt      241
Pro Pro Ser Arg Asp Gly Pro Glu Pro Gln Glu Gly Gly Gln Pro Gly
         65                  70                  75
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gct gtg caa cgg tgc gcc ttg cct ccc cgc ttg aaa gag atg aag agt      289
Ala Val Gln Arg Cys Ala Leu Pro Pro Arg Leu Lys Glu Met Lys Ser
     80                  85                  90

cag gag tct gtg gca ggt tcc aaa cta gtg ctt cgg tgc gag acc agt      337
Gln Glu Ser Val Ala Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser
 95                 100                 105                 110

tct gaa tac tcc tct ctc aag ttc aag tgg ttc aag aat ggg agt gaa      385
Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp Phe Lys Asn Gly Ser Glu
                115                 120                 125

tta agc cga aag aac aaa cca gaa aac atc aag ata cag aaa agg ccg      433
Leu Ser Arg Lys Asn Lys Pro Glu Asn Ile Lys Ile Gln Lys Arg Pro
            130                 135                 140

ggg aag tca gaa ctt cgc att agc aaa gcg tca ctg gct gat tct gga      481
Gly Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly
        145                 150                 155

gaa tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct      529
Glu Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser
    160                 165                 170

gcc aac atc acc att gtg gag tca aac ggt aag aga tgc cta ctg cgt      577
Ala Asn Ile Thr Ile Val Glu Ser Asn Gly Lys Arg Cys Leu Leu Arg
175                 180                 185                 190

gct att tct cag tct cta aga gga gtg atc aag gta tgt ggt cac act      625
Ala Ile Ser Gln Ser Leu Arg Gly Val Ile Lys Val Cys Gly His Thr
                195                 200                 205

tgaatcacgc aggtgtgtga aatctcattg tcaacaaata aaaatcatga aaggaaaaaa    685
aaaaaaaaaa aatcgatgtc gactcgagat gtggctgcag gtcgactcta gaggatccc     744
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<210> 134
<211> 1193
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (8)...(796)

<400> 134

```
cctgcag cat caa gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac       49
       His Gln Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp
        1               5                   10

tcg ctg ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc       97
```

```
Ser Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro
 15                  20                  25                  30

tcc tgc ggg cgc ctc aag gag gac agc agg tac atc ttc ttc atg gag      145
Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu
                 35                  40                  45

ccc gag gcc aac agc agc ggc ggg ccc ggc cgc ctt ccg agc ctc ctt      193
Pro Glu Ala Asn Ser Ser Gly Gly Pro Gly Arg Leu Pro Ser Leu Leu
             50                  55                  60

ccc ccc tct cga gac ggg ccg gaa cct caa gaa gga ggt cag ccg ggt      241
Pro Pro Ser Arg Asp Gly Pro Glu Pro Gln Glu Gly Gly Gln Pro Gly
         65                  70                  75

gct gtg caa cgg tgc gcc ttg cct ccc cgc ttg aaa gag atg aag agt      289
Ala Val Gln Arg Cys Ala Leu Pro Pro Arg Leu Lys Glu Met Lys Ser
     80                  85                  90

cag gag tct gtg gca ggt tcc aaa cta gtg ctt cgg tgc gag acc agt      337
Gln Glu Ser Val Ala Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser
 95                  100                 105                 110

tct gaa tac tcc tct ctc aag ttc aag tgg ttc aag aat ggg agt gaa      385
Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp Phe Lys Asn Gly Ser Glu
                115                 120                 125

tta agc cga aag aac aaa cca gaa aac atc aag ata cag aaa agg ccg      433
Leu Ser Arg Lys Asn Lys Pro Glu Asn Ile Lys Ile Gln Lys Arg Pro
            130                 135                 140

ggg aag tca gga ctt cgc att agc aaa gcg tca ctg gct gat tct gga      481
Gly Lys Ser Gly Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly
        145                 150                 155

gaa tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct      529
Glu Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser
    160                 165                 170

gcc aac atc acc att gtg gag tca aac gcc aca tcc aca tct aca gct      577
Ala Asn Ile Thr Ile Val Glu Ser Asn Ala Thr Ser Thr Ser Thr Ala
175                 180                 185                 190

ggg aca agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt      625
Gly Thr Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys
                195                 200                 205

gtg aat gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca      673
Val Asn Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser
            210                 215                 220
```

```
aga tac ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act      721
Arg Tyr Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr
        225                 230                 235

gag aat gtg ccc atg aaa gtc caa acc caa gaa agt gcc caa atg agt      769
Glu Asn Val Pro Met Lys Val Gln Thr Gln Glu Ser Ala Gln Met Ser
    240                 245                 250

tta ctg gtg atc gct gcc aaa act acg taatggccag cttctacagt           816
Leu Leu Val Ile Ala Ala Lys Thr Thr
255                 260

acgtccactc cctttctgtc tctgcctgaa tagcgcatct cagtcggtgc cgctttcttg    876
ttgccgcatc tcccctcaga ttcctcctag agctagatgc gttttaccag gtctaacatt    936
gactgcctct gcctgtcgca tgagaacatt aacacaagcg attgtatgac ttcctctgtc    996
cgtgactagt gggctctgag ctactcgtag gtgcgtaagg ctccagtgtt tctgaaattg   1056
atcttgaatt actgtgatac gacatgatag tccctctcac ccagtgcaat gacaataaag   1116
gccttgaaaa gtcaaaaaaa aaaaaaaaaa aaaaaatcga tgtcgactcg agatgtggct   1176
gcaggtcgac tctagag                                                  1193

      <210> 135
      <211> 1108
      <212> DNA
      <213> Bos taurus

      <220>
      <221> CDS
      <222> (8)...(778)

      <400> 135
cctgcag cat caa gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac       49
        His Gln Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp
         1               5                  10

tcg ctg ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc       97
Ser Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro
 15                  20                  25                  30

tcc tgc ggg cgc ctc aag gag gac agc agg tac atc ttc ttc atg gag      145
Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu
                35                  40                  45

ccc gag gcc aac agc agc ggc ggg ccc ggc cgc ctt ccg agc ctc ctt      193
Pro Glu Ala Asn Ser Ser Gly Gly Pro Gly Arg Leu Pro Ser Leu Leu
            50                  55                  60

ccc ccc tct cga gac ggg ccg gaa cct caa gaa gga ggt cag ccg ggt      241
Pro Pro Ser Arg Asp Gly Pro Glu Pro Gln Glu Gly Gly Gln Pro Gly
        65                  70                  75

gct gtg caa cgg tgc gcc ttg cct ccc cgc ttg aaa gag atg aag agt      289
```

```
Ala Val Gln Arg Cys Ala Leu Pro Pro Arg Leu Lys Glu Met Lys Ser
     80                  85                  90

cag gag tct gtg gca ggt tcc aaa cta gtg ctt cgg tgc gag acc agt      337
Gln Glu Ser Val Ala Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser
 95                 100                 105                 110

tct gaa tac tcc tct ctc aag ttc aag tgg ttc aag aat ggg agt gaa      385
Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp Phe Lys Asn Gly Ser Glu
                115                 120                 125

tta agc cga aag aac aaa cca gaa aac atc aag ata cag aaa agg ccg      433
Leu Ser Arg Lys Asn Lys Pro Glu Asn Ile Lys Ile Gln Lys Arg Pro
            130                 135                 140

ggg aag tca gaa ctt cgc att agc aaa gcg tca ctg gct gat tct gga      481
Gly Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly
        145                 150                 155

gaa tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct      529
Glu Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser
    160                 165                 170

gcc aac atc acc att gtg gag tca aac gcc aca tcc aca tct aca gct      577
Ala Asn Ile Thr Ile Val Glu Ser Asn Ala Thr Ser Thr Ser Thr Ala
175                 180                 185                 190

ggg aca agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt      625
Gly Thr Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys
                195                 200                 205

gtg aat gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca      673
Val Asn Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser
            210                 215                 220

aga tac ttg tgc aag tgc cca aat gag ttt act ggt gat cgc tgc caa      721
Arg Tyr Leu Cys Lys Cys Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln
        225                 230                 235

aac tac gta atg gcc agc ttc tac agt acg tcc act ccc ttt ctg tct      769
Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr Ser Thr Pro Phe Leu Ser
    240                 245                 250

ctg cct gaa tagcgcatct cagtcggtgc cgctttcttg ttgccgcatc              818
Leu Pro Glu
255

tcccctcaga ttccgcctag agctagatgc gttttaccag gtctaacatt gactgcctct    878
gcctgtcgca tgagaacatt aacacaagcg attgtatgac ttcctctgtc cgtgactagt    938
gggctctgag ctactcgtag gtgcgtaagg ctccagtgtt tctgaaattg atcttgaatt    998
actgtgatac gacatgatag tccctctcac ccagtgcaat gacaataaag gccttgaaaa   1058
```

gtcaaaaaaa aaaaaaaaaa aaaaatcgat gtcgactcga gatgtggctg 1108

<210> 136
<211> 561
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (460)...(561)

<223> N in position 214 is unknown.

<221> variation
<222> (560)...(560)
<223> N in position 560 is c or is absent.

<221> variation
<222> (561)...(561)
<223> N in position 561 is c or is absent.

<221> variation
<222> (34)...(34)
<223> Xaa in position 34 is Ala or is absent.

<400> 136
agtttccccc cccaacttgt cggaactctg ggctcgcgcg cagggcagga gcggagcggc 60
ggcggctgcc caggcgatgc gagcgcgggc cggacggtaa tcgcctctcc ctcctcgggc 120
tgcgagcgcg ccggaccgag gcagcgacag gagcggaccg cggcgggaac cgaggactcc 180
ccagcggcgc gccagcagga gccaccccgc gagncgtgcg accgggacgg agcgcccgcc 240
agtcccaggt ggcccggacc gcacgttgcg tccccgcgct ccccgccggc gacaggagac 300
gctccccccc acgccgcgcg cgcctcggcc cggtcgctgg cccgcctcca ctccggggac 360
aaacttttcc cgaagccgat cccagccctc ggacccaaac ttgtcgcgcg tcgccttcgc 420
cgggagccgt ccgcgcagag cgtgcacttc tcgggcgag atg tcg gag cgc aga 474
Met Ser Glu Arg Arg
1 5

gaa ggc aaa ggc aag ggg aag ggc ggc aag aag gac cga ggc tcc ggg 522
Glu Gly Lys Gly Lys Gly Lys Gly Gly Lys Lys Asp Arg Gly Ser Gly
10 15 20

aag aag ccc gtg ccc gcg gct ggc ggc ccg agc cca gnn 561
Lys Lys Pro Val Pro Ala Ala Gly Gly Pro Ser Pro Xaa
25 30

<210> 137
<211> 252
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (3)...(251)

<221> variation
<222> (8)...(8)
<223> N in position 8 varies.

<221> variation
<222> (2)...(2)
<223> Xaa in position 2 is Gln.

<400> 137

```
cc cat can gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac tcg        47
   His Xaa Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp Ser
    1               5                  10                  15

ctg ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc tcc       95
Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro Ser
                20                  25                  30

tgc ggg cgc ctc aag gag gac agc agg tac atc ttc ttc atg gag ccc      143
Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu Pro
            35                  40                  45

gag gcc aac agc agc ggc ggg ccc ggc cgc ctt ccg agc ctc ctt ccc      191
Glu Ala Asn Ser Ser Gly Gly Pro Gly Arg Leu Pro Ser Leu Leu Pro
        50                  55                  60

ccc tct cga gac ggg ccg gaa cct caa gaa gga ggt cag ccg ggt gct      239
Pro Ser Arg Asp Gly Pro Glu Pro Gln Glu Gly Gly Gln Pro Gly Ala
    65                  70                  75

gtg caa cgg tgc g                                                   252
Val Gln Arg Cys
 80
```

<210> 138
<211> 179
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (3)...(179)

<221> variation
<222> (179)...(179)
<223> N in position 179 is g or is absent.

<221> variation
<222> (59)...(59)
<223> Xaa in position 59 is Gly or is absent.

<400> 138
cc ttg cct ccc cgc ttg aaa gag atg aag agt cag gag tct gtg gca 47
Leu Pro Pro Arg Leu Lys Glu Met Lys Ser Gln Glu Ser Val Ala
1 5 10 15

ggt tcc aaa cta gtg ctt cgg tgc gag acc agt tct gaa tac tcc tct 95
Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser Ser Glu Tyr Ser Ser
20 25 30

ctc aag ttc aag tgg ttc aag aat ggg agt gaa tta agc cga aag aac 143
Leu Lys Phe Lys Trp Phe Lys Asn Gly Ser Glu Leu Ser Arg Lys Asn
35 40 45

aaa cca caa aac atc aag ata cag aaa agg ccg ggn 179
Lys Pro Gln Asn Ile Lys Ile Gln Lys Arg Pro Xaa
50 55

<210> 139
<211> 124
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (2)...(124)

<221> variation
<222> (123)...(124)
<223> N in positions 123 and 124 are both c, or are a
and g, resepctively, or are absent.

<221> variation
<222> (41)...(41)
<223> Xaa in position 41 is Ala, Glu or absent.

<400> 139
g aag tca gaa ctt cgc att agc aaa gcg tca ctg gct gat tct gga gaa 49
Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu
1 5 10 15

tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct gcc 97
Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala
20 25 30

aac atc acc att gtg gag tca aac gnn 124
Asn Ile Thr Ile Val Glu Ser Asn Xaa

35 40

<210> 140
<211> 417
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (84)...(272)

<400> 140
tctaaaacta cagagactgt attttcatga tcatcatagt tctgtgaaat atacttaaac 60
cgctttggtc ctgatcttgt agg aag tca gaa ctt cgc att agc aaa gcg tca 113
Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser
1 5 10

ctg gct gat tct gga gaa tat atg tgc aaa gtg atc agc aaa cta gga 161
Leu Ala Asp Ser Gly Glu Tyr Met Cys Lys Val Ile Ser Lys Leu Gly
15 20 25

aat gac agt gcc tct gcc aac atc acc att gtg gag tca aac ggt aag 209
Asn Asp Ser Ala Ser Ala Asn Ile Thr Ile Val Glu Ser Asn Gly Lys
30 35 40

aga tgc cta ctg cgt gct att tct cag tct cta aga gga gtg atc aag 257
Arg Cys Leu Leu Arg Ala Ile Ser Gln Ser Leu Arg Gly Val Ile Lys
45 50 55

gta tgt ggt cac act tgaatcacgc aggtgtgtga aatctcattg tgaacaaata 312
Val Cys Gly His Thr
60

aaaatcatga aaggaaaact ctatgtttga aatatcttat gggtcctcct gtaaagctct 372
tcactccata aggtgaaata gacctgaaat atatatagat tattt 417

<210> 141
<211> 102
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(102)

<221> variation
<222> (1)...(1)
<223> N in position 1 varies.

<221> variation

<222> (1)...(1)
<223> Xaa in position 1 is Glu.

<400> 141
nag atc acc act ggc atg cca gcc tca act gag aca gcg tat gtg tct 48
Xaa Ile Thr Thr Gly Met Pro Ala Ser Thr Glu Thr Ala Tyr Val Ser
1 5 10 15

tca gag tct ccc att aga ata tca gta tca aca gaa gga aca aat act 96
Ser Glu Ser Pro Ile Arg Ile Ser Val Ser Thr Glu Gly Thr Asn Thr
20 25 30

tct tca t 103
Ser Ser

<210> 142
<211> 69
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(69)

<400> 142
aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat gtg ccc 48
Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn Val Pro
1 5 10 15

atg aaa gtc caa acc caa gaa 69
Met Lys Val Gln Thr Gln Glu
20

<210> 143
<211> 60
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(60)

<400> 143
aag tgc cca aat gag ttt act ggt gat cgc tgc caa aac tac gta atg 48
Lys Cys Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met
1 5 10 15

gcc agc ttc tac 60

Ala Ser Phe Tyr
20

<210> 144
<211> 36
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(33)

<400> 144
agt acg tcc act ccc ttt ctg tct ctg cct gaa tag 36
Ser Thr Ser Thr Pro Phe Leu Ser Leu Pro Glu
1 5 10

<210> 145
<211> 27
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(27)
<223>

<400> 145
aag cat ctt ggg att gaa ttt atg gag 27
Lys His Leu Gly Ile Glu Phe Met Glu
1 5

<210> 146
<211> 569
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(565)

<400> 146
aaa gcg gag gag ctc tac cag aag aga gtg ctc acc att acc ggc att 48
Lys Ala Glu Glu Leu Tyr Gln Lys Arg Val Leu Thr Ile Thr Gly Ile
1 5 10 15

tgc atc gcg ctg ctc gtg gtt ggc atc atg tgt gtg gtg gtc tac tgc 96

```
Cys Ile Ala Leu Leu Val Val Gly Ile Met Cys Val Val Val Tyr Cys
             20                  25                  30

aaa acc aag aaa caa cgg aaa aag ctt cat gac cgg ctt cgg cag agc      144
Lys Thr Lys Lys Gln Arg Lys Lys Leu His Asp Arg Leu Arg Gln Ser
         35                  40                  45

ctt cgg tct gaa aga aac acc atg atg aac gta gcc aac ggg ccc cac      192
Leu Arg Ser Glu Arg Asn Thr Met Met Asn Val Ala Asn Gly Pro His
     50                  55                  60

cac ccc aat ccg ccc ccc gag aac gtg cag ctg gtg aat caa tac gta      240
His Pro Asn Pro Pro Pro Glu Asn Val Gln Leu Val Asn Gln Tyr Val
 65                  70                  75                  80

tct aaa aat gtc atc tct agc gag cat att gtt gag aga gag gcg gag      288
Ser Lys Asn Val Ile Ser Ser Glu His Ile Val Glu Arg Glu Ala Glu
                 85                  90                  95

agc tct ttt tcc acc agt cac tac act tcg aca gct cat cat tcc act      336
Ser Ser Phe Ser Thr Ser His Tyr Thr Ser Thr Ala His His Ser Thr
            100                 105                 110

act gtc act cag act ccc agt cac agc tgg agc aat gga cac act gaa      384
Thr Val Thr Gln Thr Pro Ser His Ser Trp Ser Asn Gly His Thr Glu
        115                 120                 125

agc atc att tcg gaa agc cac tct gtc atc gtg atg tca tcc gta gaa      432
Ser Ile Ile Ser Glu Ser His Ser Val Ile Val Met Ser Ser Val Glu
    130                 135                 140

aac agt agg cac agc agc ccg act ggg ggc ccg aga gga cgt ctc aat      480
Asn Ser Arg His Ser Ser Pro Thr Gly Gly Pro Arg Gly Arg Leu Asn
145                 150                 155                 160

ggc ttg gga ggc cct cgt gaa tgt aac agc ttc ctc agg cat gcc aga      528
Gly Leu Gly Gly Pro Arg Glu Cys Asn Ser Phe Leu Arg His Ala Arg
                165                 170                 175

gaa acc cct gac tcc tac cga gac tct cct cat agt g aaag               569
Glu Thr Pro Asp Ser Tyr Arg Asp Ser Pro His Ser
            180                 185
```

<210> 147
<211> 730
<212> DNA
<213> Bos taurus

<220>
<221> CDS

<222> (2)...(652)

<400> 147

```
g tat gta tca gca atg acc acc ccg gct cgt atg tca cct gta gat ttc     49
  Tyr Val Ser Ala Met Thr Thr Pro Ala Arg Met Ser Pro Val Asp Phe
   1               5                  10                  15

cac acg cca agc tcc ccc aag tca ccc cct tcg gaa atg tcc ccg ccc      97
His Thr Pro Ser Ser Pro Lys Ser Pro Pro Ser Glu Met Ser Pro Pro
            20                  25                  30

gtg tcc agc acg acg gtc tcc atg ccc tcc atg gcg gtc agt ccc ttc     145
Val Ser Ser Thr Thr Val Ser Met Pro Ser Met Ala Val Ser Pro Phe
         35                  40                  45

gtg gaa gag gag aga ccc ctg ctc ctt gtg acg cca cca cgg ctg cgg     193
Val Glu Glu Glu Arg Pro Leu Leu Leu Val Thr Pro Pro Arg Leu Arg
     50                  55                  60

gag aag tat gac cac cac gcc cag caa ttc aac tcg ttc cac tgc aac     241
Glu Lys Tyr Asp His His Ala Gln Gln Phe Asn Ser Phe His Cys Asn
 65                  70                  75                  80

ccc gcg cat gag agc aac agc ctg ccc ccc agc ccc ttg agg ata gtg     289
Pro Ala His Glu Ser Asn Ser Leu Pro Pro Ser Pro Leu Arg Ile Val
                85                  90                  95

gag gat gag gaa tat gaa acg acc cag gag tac gaa cca gct caa gag     337
Glu Asp Glu Glu Tyr Glu Thr Thr Gln Glu Tyr Glu Pro Ala Gln Glu
            100                 105                 110

ccg gtt aag aaa ctc acc aac agc agc cgg cgg gcc aaa aga acc aag     385
Pro Val Lys Lys Leu Thr Asn Ser Ser Arg Arg Ala Lys Arg Thr Lys
        115                 120                 125

ccc aat ggt cac att gcc cac agg ttg gaa atg gac aac aac aca ggc     433
Pro Asn Gly His Ile Ala His Arg Leu Glu Met Asp Asn Asn Thr Gly
    130                 135                 140

gct gac agc agt aac tca gag agc gaa aca gag gat gaa aga gta gga     481
Ala Asp Ser Ser Asn Ser Glu Ser Glu Thr Glu Asp Glu Arg Val Gly
145                 150                 155                 160

gaa gat acg cct ttc ctg gcc ata cag aac ccc ctg gca gcc agt ctc     529
Glu Asp Thr Pro Phe Leu Ala Ile Gln Asn Pro Leu Ala Ala Ser Leu
                165                 170                 175

gag gcg gcc cct gcc ttc cgc ctg gtc gac agc agg act aac cca aca     577
Glu Ala Ala Pro Ala Phe Arg Leu Val Asp Ser Arg Thr Asn Pro Thr
            180                 185                 190
```

```
ggc ggc ttc tct ccg cag gaa gaa ttg cag gcc agg ctc tcc ggt gta      625
Gly Gly Phe Ser Pro Gln Glu Glu Leu Gln Ala Arg Leu Ser Gly Val
        195                 200                 205

atc gct aac caa gac cct atc gct gtc taaaaccgaa atacacccat          672
Ile Ala Asn Gln Asp Pro Ile Ala Val
    210                 215

agattcacct gtaaaacttt attttatata ataaagtatt ccaccttaaa ttaaacaa     730
```

<210> 148
<211> 1652
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (459)...(1181)

<400> 148

```
agtttccccc cccaacttgt cggaactctg ggctcgcgcg cagggcagga gcggagcggc     60
ggcggctgcc caggcgatgc gagcgcgggc cggacggtaa tcgcctctcc ctcctcgggc    120
tgcgagcgcg ccggaccgag gcagcgacag gagcggaccg cggcgggaac cgaggactcc    180
ccagcggcgc gccagcagga gccaccccgc gagcgtgcga ccgggacgga gcgcccgcca    240
gtcccaggtg gcccggaccg cacgttgcgt ccccgcgctc cccgccggcg acaggagacg    300
ctccccccca cgccgcgcgc gcctcggccc ggtcgctggc ccgcctccac tccggggaca    360
aacttttccc gaagccgatc ccagccctcg gacccaaact tgtcgcgcgt cgccttcgcc    420
gggagccgtc cgcgcagagc gtgcacttct cgggcgag atg tcg gag cgc aga gaa     476
                                        Met Ser Glu Arg Arg Glu
                                         1               5

ggc aaa ggc aag ggg aag ggc ggc aag aag gac cga ggc tcc ggg aag      524
Gly Lys Gly Lys Gly Lys Gly Gly Lys Lys Asp Arg Gly Ser Gly Lys
            10                  15                  20

aag ccc gtg ccc gcg gct ggc ggc ccg agc cca gcc ttg cct ccc cgc      572
Lys Pro Val Pro Ala Ala Gly Gly Pro Ser Pro Ala Leu Pro Pro Arg
        25                  30                  35

ttg aaa gag atg aag atg cag gag tct gtg gca ggt tcc aaa cta gtg      620
Leu Lys Glu Met Lys Met Gln Glu Ser Val Ala Gly Ser Lys Leu Val
    40                  45                  50

ctt cgg tgc gag acc agt tct gaa tac tcc tct ctc aag ttc aag tgg      668
Leu Arg Cys Glu Thr Ser Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp
55                  60                  65                  70

ttc aag aat ggg agt gaa tta agc cga aag aac aaa cca caa aac atc      716
Phe Lys Asn Gly Ser Glu Leu Ser Arg Lys Asn Lys Pro Gln Asn Ile
                75                  80                  85
```

```
aag ata cag aaa agg ccg ggg aag tca gaa ctt cgc att agc aaa gcg      764
Lys Ile Gln Lys Arg Pro Gly Lys Ser Glu Leu Arg Ile Ser Lys Ala
             90                  95                 100

tca ctg gct gat tct gga gaa tat atg tgc aaa gtg atc agc aaa cta      812
Ser Leu Ala Asp Ser Gly Glu Tyr Met Cys Lys Val Ile Ser Lys Leu
        105                 110                 115

gga aat gac agt gcc tct gcc aac atc acc att gtg gag tca aac gag      860
Gly Asn Asp Ser Ala Ser Ala Asn Ile Thr Ile Val Glu Ser Asn Glu
    120                 125                 130

atc acc act ggc atg cca gcc tca act gag aca gcg tat gtg tct tca      908
Ile Thr Thr Gly Met Pro Ala Ser Thr Glu Thr Ala Tyr Val Ser Ser
135                 140                 145                 150

gag tct ccc att aga ata tca gta tca aca gaa gga aca aat act tct      956
Glu Ser Pro Ile Arg Ile Ser Val Ser Thr Glu Gly Thr Asn Thr Ser
                155                 160                 165

tca tcc aca tcc aca tct aca gct ggg aca agc cat ctt gtc aag tgt     1004
Ser Ser Thr Ser Thr Ser Thr Ala Gly Thr Ser His Leu Val Lys Cys
            170                 175                 180

gca gag aag gag aaa act ttc tgt gtg aat gga ggc gag tgc ttc atg     1052
Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met
        185                 190                 195

gtg aaa gac ctt tca aat ccc tca aga tac ttg tgc aag tgc cca aat     1100
Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys Pro Asn
    200                 205                 210

gag ttt act ggt gat cgc tgc caa aac tac gta atg gcc agc ttc tac     1148
Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr
215                 220                 225                 230

agt acg tcc act ccc ttt ctg tct ctg cct gaa taggcgcatg ctcagtcggt   1201
Ser Thr Ser Thr Pro Phe Leu Ser Leu Pro Glu
                235                 240

gccgctttct tgttgccgca tctcccctca gattcaacct agagctagat gcgttttacc   1261
aggtctaaca ttgactgcct ctgcctgtcg catgagaaca ttaacacaag cgattgtatg   1321
acttcctctg tccgtgacta gtgggctctg agctactcgt aggtgcgtaa ggctccagtg   1381
tttctgaaat tgatcttgaa ttactgtgat acgacatgat agtccctctc acccagtgca   1441
atgacaataa aggccttgaa aagtctcact tttattgaga aaataaaaat cgttccacgg   1501
gacagtccct cttctttata aaatgaccct atccttgaaa aggaggtgtg ttaagttgta   1561
accagtacac acttgaaatg atggtaagtt cgcttcggtt cagaatgtgt tctttctgac   1621
aaataaacag aataaaaaaa aaaaaaaaaa a                                  1652
```

<210> 149
<211> 1140

<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(840)

<223> Xaa in position 2 is unknown.

<400> 149

```
cat can gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac tcg ctg       48
His Xaa Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp Ser Leu
 1               5                  10                  15

ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc tcc tgc       96
Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro Ser Cys
            20                  25                  30

ggg cgc ctc aag gag gac agc agg tac atc ttc ttc atg gag ccc gag      144
Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu Pro Glu
         35                  40                  45

gcc aac agc agc ggc ggg ccc ggc cgc ctt ccg agc ctc ctt ccc ccc      192
Ala Asn Ser Ser Gly Gly Pro Gly Arg Leu Pro Ser Leu Leu Pro Pro
     50                  55                  60

tct cga gac ggg ccg gaa cct caa gaa gga ggt cag ccg ggt gct gtg      240
Ser Arg Asp Gly Pro Glu Pro Gln Glu Gly Gly Gln Pro Gly Ala Val
 65                  70                  75                  80

caa cgg tgc gcc ttg cct ccc cgc ttg aaa gag atg aag agt cag gag      288
Gln Arg Cys Ala Leu Pro Pro Arg Leu Lys Glu Met Lys Ser Gln Glu
                85                  90                  95

tct gtg gca ggt tcc aaa cta gtg ctt cgg tgc gag acc agt tct gaa      336
Ser Val Ala Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser Ser Glu
            100                 105                 110

tac tcc tct ctc aag ttc aag tgg ttc aag aat ggg agt gaa tta agc      384
Tyr Ser Ser Leu Lys Phe Lys Trp Phe Lys Asn Gly Ser Glu Leu Ser
        115                 120                 125

cga aag aac aaa cca gaa aac atc aag ata cag aaa agg ccg ggg aag      432
Arg Lys Asn Lys Pro Glu Asn Ile Lys Ile Gln Lys Arg Pro Gly Lys
    130                 135                 140

tca gaa ctt cgc att agc aaa gcg tca ctg gct gat tct gga gaa tat      480
Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr
145                 150                 155                 160

atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct gcc aac      528
```

```
Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala Asn
                165                 170                 175

atc acc att gtg gag tca aac gcc aca tcc aca tct aca gct ggg aca      576
Ile Thr Ile Val Glu Ser Asn Ala Thr Ser Thr Ser Thr Ala Gly Thr
            180                 185                 190

agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat      624
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
        195                 200                 205

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac      672
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
    210                 215                 220

ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat      720
Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn
225                 230                 235                 240

gtg ccc atg aaa gtc caa acc caa gaa aag tgc cca aat gag ttt act      768
Val Pro Met Lys Val Gln Thr Gln Glu Lys Cys Pro Asn Glu Phe Thr
                245                 250                 255

ggt gat cgc tgc caa aac tac gta atg gcc agc ttc tac agt acg tcc      816
Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr Ser
            260                 265                 270

act ccc ttt ctg tct ctg cct gaa tagcgcatct cagtcggtgc cgctttcttg     870
Thr Pro Phe Leu Ser Leu Pro Glu
        275                 280

ttgccgcatc tcccctcaga ttccncctag agctagatgc gttttaccag gtctaacatt    930
gactgcctct gcctgtcgca tgagaacatt aacacaagcg attgtatgac ttcctctgtc    990
cgtgactagt gggctctgag ctactcgtag gtgcgtaagg ctccagtgtt tctgaaattg   1050
atcttgaatt actgtgatac gacatgatag tccctctcac ccagtgcaat gacaataaag   1110
gccttgaaaa gtcaaaaaaa aaaaaaaaaa                                    1140
```

<210> 150
<211> 1764
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (2)...(1681)

<400> 150

```
g aag tca gaa ctt cgc att agc aaa gcg tca ctg gct gat tct gga gaa     49
  Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu
   1               5                  10                  15
```

```
tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct gcc        97
Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala
            20                  25                  30

aac atc acc att gtg gag tca aac gcc aca tcc aca tct aca gct ggg       145
Asn Ile Thr Ile Val Glu Ser Asn Ala Thr Ser Thr Ser Thr Ala Gly
        35                  40                  45

aca agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg       193
Thr Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val
    50                  55                  60

aat gga ggc gac tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga       241
Asn Gly Gly Asp Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg
65                  70                  75                  80

tac ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag       289
Tyr Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu
                85                  90                  95

aat gtg ccc atg aaa gtc caa acc caa gaa aaa gcg gag gag ctc tac       337
Asn Val Pro Met Lys Val Gln Thr Gln Glu Lys Ala Glu Glu Leu Tyr
            100                 105                 110

cag aag aga gtg ctc acc att acc ggc att tgc atc gcg ctg ctc gtg       385
Gln Lys Arg Val Leu Thr Ile Thr Gly Ile Cys Ile Ala Leu Leu Val
        115                 120                 125

gtt ggc atc atg tgt gtg gtg gtc tac tgc aaa acc aag aaa caa cgg       433
Val Gly Ile Met Cys Val Val Val Tyr Cys Lys Thr Lys Lys Gln Arg
    130                 135                 140

aaa aag ctt cat gac cgg ctt cgg cag agc ctt cgg tct gaa aga aac       481
Lys Lys Leu His Asp Arg Leu Arg Gln Ser Leu Arg Ser Glu Arg Asn
145                 150                 155                 160

acc atg atg aac gta gcc aac ggg ccc cac cac ccc aat ccg ccc ccc       529
Thr Met Met Asn Val Ala Asn Gly Pro His His Pro Asn Pro Pro Pro
                165                 170                 175

gag aac gtg cag ctg gtg aat caa tac gta tct aaa aat gtc atc tct       577
Glu Asn Val Gln Leu Val Asn Gln Tyr Val Ser Lys Asn Val Ile Ser
            180                 185                 190

agc gag cat att gtt gag aga gag gcg gag agc tct ttt tcc acc agt       625
Ser Glu His Ile Val Glu Arg Glu Ala Glu Ser Ser Phe Ser Thr Ser
        195                 200                 205

cac tac act tcg aca gct cat cat tcc act act gtc act cag act ccc       673
His Tyr Thr Ser Thr Ala His His Ser Thr Thr Val Thr Gln Thr Pro
    210                 215                 220
```

```
agt cac agc tgg agc aat gga cac act gaa agc atc att tcg gaa agc      721
Ser His Ser Trp Ser Asn Gly His Thr Glu Ser Ile Ile Ser Glu Ser
225                 230                 235                 240

cac tct gtc atc gtg atg tca tcc gta gaa aac agt agg cac agc agc      769
His Ser Val Ile Val Met Ser Ser Val Glu Asn Ser Arg His Ser Ser
                245                 250                 255

ccg act ggg ggc ccg aga gga cgt ctc aat ggc ttg gga ggc cct cgt      817
Pro Thr Gly Gly Pro Arg Gly Arg Leu Asn Gly Leu Gly Gly Pro Arg
            260                 265                 270

gaa tgt aac agc ttc ctc agg cat gcc aga gaa acc cct gac tcc tac      865
Glu Cys Asn Ser Phe Leu Arg His Ala Arg Glu Thr Pro Asp Ser Tyr
        275                 280                 285

cga gac tct cct cat agt gaa aga cat aac ctt ata gct gag cta agg      913
Arg Asp Ser Pro His Ser Glu Arg His Asn Leu Ile Ala Glu Leu Arg
    290                 295                 300

aga aac aag gcc cac aga tcc aaa tgc atg cag atc cag ctt tcc gca      961
Arg Asn Lys Ala His Arg Ser Lys Cys Met Gln Ile Gln Leu Ser Ala
305                 310                 315                 320

act cat ctt aga gct tct tcc att ccc cat tgg gct tca ttc tct aag     1009
Thr His Leu Arg Ala Ser Ser Ile Pro His Trp Ala Ser Phe Ser Lys
                325                 330                 335

acc cct tgg cct tta gga agg tat gta tca gca atg acc acc ccg gct     1057
Thr Pro Trp Pro Leu Gly Arg Tyr Val Ser Ala Met Thr Thr Pro Ala
            340                 345                 350

cgt atg tca cct gta gat ttc cac acg cca agc tcc ccc aag tca ccc     1105
Arg Met Ser Pro Val Asp Phe His Thr Pro Ser Ser Pro Lys Ser Pro
        355                 360                 365

cct tcg gaa atg tcc ccg ccc gtg tcc agc acg acg gtc tcc atg ccc     1153
Pro Ser Glu Met Ser Pro Pro Val Ser Ser Thr Thr Val Ser Met Pro
    370                 375                 380

tcc atg gcg gtc agt ccc ttc gtg gaa gag gag aga ccc ctg ctc ctt     1201
Ser Met Ala Val Ser Pro Phe Val Glu Glu Glu Arg Pro Leu Leu Leu
385                 390                 395                 400

gtg acg cca cca cgg ctg cgg gag aag tat gac cac cac gcc cag caa     1249
Val Thr Pro Pro Arg Leu Arg Glu Lys Tyr Asp His His Ala Gln Gln
                405                 410                 415

ttc aac tcg ttc cac tgc aac ccc gcg cat gag agc aac agc ctg ccc     1297
Phe Asn Ser Phe His Cys Asn Pro Ala His Glu Ser Asn Ser Leu Pro
```

```
            420                 425                 430

ccc agc ccc ttg agg ata gtg gag gat gag gaa tat gaa acg acc cag     1345
Pro Ser Pro Leu Arg Ile Val Glu Asp Glu Glu Tyr Glu Thr Thr Gln
        435                 440                 445

gag tac gaa cca gct caa gag ccg gtt aag aaa ctc acc aac agc agc     1393
Glu Tyr Glu Pro Ala Gln Glu Pro Val Lys Lys Leu Thr Asn Ser Ser
    450                 455                 460

cgg cgg gcc aaa aga acc aag ccc aat ggt cac att gcc cac agg ttg     1441
Arg Arg Ala Lys Arg Thr Lys Pro Asn Gly His Ile Ala His Arg Leu
465                 470                 475                 480

gaa atg gac aac aac aca ggc gct gac agc agt aac tca gag agc gaa     1489
Glu Met Asp Asn Asn Thr Gly Ala Asp Ser Ser Asn Ser Glu Ser Glu
                485                 490                 495

aca gag gat gaa aga gta gga gaa gat acg cct ttc ctg gcc ata cag     1537
Thr Glu Asp Glu Arg Val Gly Glu Asp Thr Pro Phe Leu Ala Ile Gln
            500                 505                 510

aac ccc ctg gca gcc agt ctc gag gcg gcc cct gcc ttc cgc ctg gtc     1585
Asn Pro Leu Ala Ala Ser Leu Glu Ala Ala Pro Ala Phe Arg Leu Val
        515                 520                 525

gac agc agg act aac cca aca ggc ggc ttc tct ccg cag gaa gaa ttg     1633
Asp Ser Arg Thr Asn Pro Thr Gly Gly Phe Ser Pro Gln Glu Glu Leu
    530                 535                 540

cag gcc agg ctc tcc ggt gta atc gct aac caa gac cct atc gct gtc     1681
Gln Ala Arg Leu Ser Gly Val Ile Ala Asn Gln Asp Pro Ile Ala Val
545                 550                 555                 560

taaaaccgaa atacacccat agattcacct gtaaaacttt attttatata ataaagtatt   1741
ccaccttaaa ttaaacaaaa aaa                                           1764

      <210> 151
      <211> 50
      <212> PRT
      <213> Bos taurus

      <400> 151
Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys
 1               5                  10                  15
Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys
            20                  25                  30
Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser
        35                  40                  45
Phe Tyr
    50
```

<210> 152
<211> 50
<212> PRT
<213> Bos taurus

<400> 152
Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys
 1   5   10   15
Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys
            20   25   30
Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn Val Pro Met Lys
        35   40   45
Val Gln
    50

<210> 153
<211> 46
<212> PRT
<213> Homo sapiens

<400> 153
Glu Cys Leu Arg Lys Tyr Lys Asp Phe Cys Ile His Gly Glu Cys Lys
 1   5   10   15
Tyr Val Lys Glu Leu Arg Ala Pro Ser Cys Lys Cys Gln Gln Glu Tyr
            20   25   30
Phe Gly Glu Arg Cys Gly Glu Lys Ser Asn Lys Thr His Ser
        35   40   45

<210> 154
<211> 198
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(198)

<400> 154
agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat 48
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1   5   10   15

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac 96
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
            20   25   30

ttg tgc aag tgc cca aat gag ttt act ggt gat cgc tgc caa aac tac 144
Leu Cys Lys Cys Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr
        35   40   45

gta atg gcc agc ttc tac agt acg tcc act ccc ttt ctg tct ctg cct 192

```
Val Met Ala Ser Phe Tyr Ser Thr Ser Thr Pro Phe Leu Ser Leu Pro
     50                  55                  60

gaa tag                                                          198
Glu  *
 65
```

<210> 155
<211> 192
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(189)

<400> 155

```
agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat   48
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1               5                  10                  15

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac   96
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
             20                  25                  30

ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat  144
Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn
         35                  40                  45

gtg ccc atg aaa gtc caa acc caa gaa aaa gcg gag gag ctc tac      189
Val Pro Met Lys Val Gln Thr Gln Glu Lys Ala Glu Glu Leu Tyr
     50                  55                  60

taa                                                              192
```

<210> 156
<211> 183
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(180)

<400> 156

```
agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat   48
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1               5                  10                  15

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac   96
```

```
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
            20                  25                  30

ttg tgc aag tgc cca aat gag ttt act ggt gat cgc tgc caa aac tac      144
Leu Cys Lys Cys Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr
        35                  40                  45

gta atg gcc agc ttc tac aaa gcg gag gag ctc tac taa                  183
Val Met Ala Ser Phe Tyr Lys Ala Glu Glu Leu Tyr
    50                  55                  60
```

<210> 157
<211> 210
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(207)

<400> 157

```
agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat       48
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1               5                  10                  15

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac       96
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
            20                  25                  30

ttg tgc aag tgc cca aat gag ttt act ggt gat cgc tgc caa aac tac      144
Leu Cys Lys Cys Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr
        35                  40                  45

gta atg gcc agc ttc tac aag cat ctt ggg att gaa ttt atg gag aaa      192
Val Met Ala Ser Phe Tyr Lys His Leu Gly Ile Glu Phe Met Glu Lys
    50                  55                  60

gcg gag gag ctc tac taa                                              210
Ala Glu Glu Leu Tyr
 65
```

<210> 158
<211> 267
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(264)

<400> 158

```
agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat       48
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1               5                  10                  15

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac       96
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
            20                  25                  30

ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat      144
Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn
        35                  40                  45

gtg ccc atg aaa gtc caa acc caa gaa aag tgc cca aat gag ttt act      192
Val Pro Met Lys Val Gln Thr Gln Glu Lys Cys Pro Asn Glu Phe Thr
    50                  55                  60

ggt gat cgc tgc caa aac tac gta atg gcc agc ttc tac agt acg tcc      240
Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr Ser
65                  70                  75                  80

act ccc ttt ctg tct ctg cct gaa tag                                 267
Thr Pro Phe Leu Ser Leu Pro Glu
                85
```

<210> 159
<211> 252
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(249)

<400> 159

```
agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat       48
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1               5                  10                  15

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac       96
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
            20                  25                  30

ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat      144
Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn
        35                  40                  45

gtg ccc atg aaa gtc caa acc caa gaa aag tgc cca aat gag ttt act      192
Val Pro Met Lys Val Gln Thr Gln Glu Lys Cys Pro Asn Glu Phe Thr
    50                  55                  60
```

```
ggt gat cgc tgc caa aac tac gta atg gcc agc ttc tac aaa gcg gag      240
Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Lys Ala Glu
 65                  70                  75                  80

gag ctc tac taa                                                    252
Glu Leu Tyr
```

<210> 160
<211> 128
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (3)...(125)

<400> 160

```
cc aca tcc aca tct aca gct ggg aca agc cat ctt gtc aag tgt gca       47
   Thr Ser Thr Ser Thr Ala Gly Thr Ser His Leu Val Lys Cys Ala
    1               5                  10                  15

gag aag gag aaa act ttc tgt gtg aat gga ggc gag tgc ttc atg gtg       95
Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met Val
                 20                  25                  30

aaa gac ctt tca aat ccc tca aga tac ttg tgc                         128
Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu
             35                  40
```

<210> 161
<211> 142
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (2)...(142)

<221> variation
<222> (142)...(142)
<223> N in position 142 is g or absent.

<221> variation
<222> (47)...(47)
<223> Xaa in position 47 is Arg or absent.

<400> 161

```
a cat aac ctt ata gct gag cta agg aga aac aag gcc cac aga tcc aaa      49
  His Asn Leu Ile Ala Glu Leu Arg Arg Asn Lys Ala His Arg Ser Lys
   1               5                  10                  15

tgc atg cag atc cag ctt tcc gca act cat ctt aga gct tct tcc att      97
Cys Met Gln Ile Gln Leu Ser Ala Thr His Leu Arg Ala Ser Ser Ile
             20                  25                  30

ccc cat tgg gct tca ttc tct aag acc cct tgg cct tta gga agn          142
Pro His Trp Ala Ser Phe Ser Lys Thr Pro Trp Pro Leu Gly Xaa
         35                  40                  45


      <210> 162
      <211> 24
      <212> PRT
      <213> Homo sapiens

      <220>
      <221> UNSURE
      <222> (15)...(22)
      <223> Xaa in 15 and 22 is unknown.

      <400> 162
Ala Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Xaa Phe
 1               5                  10                  15
Met Val Lys Asp Leu Xaa Asn Pro
            20

      <210> 163
      <211> 745
      <212> DNA
      <213> Homo sapiens

      <220>
      <221> CDS
      <222> (1)...(744)

      <400> 163
atg aga tgg cga cgc gcc ccg cgc cgc tcc ggg cgt ccc ggc ccc cgg      48
Met Arg Trp Arg Arg Ala Pro Arg Arg Ser Gly Arg Pro Gly Pro Arg
 1               5                  10                  15

gcc cag cgc ccc ggc tcc gcc gcc cgc tcg tcg ccg ccg ctg ccg ctg      96
Ala Gln Arg Pro Gly Ser Ala Ala Arg Ser Ser Pro Pro Leu Pro Leu
             20                  25                  30

ctg cca cta ctg ctg ctg ctg ggg acc gcg gcc ctg gcg ccg ggg gcg     144
Leu Pro Leu Leu Leu Leu Leu Gly Thr Ala Ala Leu Ala Pro Gly Ala
         35                  40                  45
```

```
gcg gcc ggc aac gag gcg gct ccc gcg ggg gcc tcg gtg tgc tac tcg      192
Ala Ala Gly Asn Glu Ala Ala Pro Ala Gly Ala Ser Val Cys Tyr Ser
     50                  55                  60

tcc ccg ccc agc gtg gga tcg gtg cag gag cta gct cag cgc gcc gcg      240
Ser Pro Pro Ser Val Gly Ser Val Gln Glu Leu Ala Gln Arg Ala Ala
 65                  70                  75                  80

gtg gtg atc gag gga aag gtg cac ccg cag cgg cgg cag cag ggg gca      288
Val Val Ile Glu Gly Lys Val His Pro Gln Arg Arg Gln Gln Gly Ala
                 85                  90                  95

ctc gac agg aag gcg gcg gcg gcg gcg ggc gag gca ggg gcg tgg ggc      336
Leu Asp Arg Lys Ala Ala Ala Ala Ala Gly Glu Ala Gly Ala Trp Gly
            100                 105                 110

ggc gat cgc gag ccg cca gcc gcg ggc cca cgg gcg ctg ggg ccg ccc      384
Gly Asp Arg Glu Pro Pro Ala Ala Gly Pro Arg Ala Leu Gly Pro Pro
        115                 120                 125

gcc gag gag ccg ctg ctc gcc gcc aac ggg acc gtg ccc tct tgg ccc      432
Ala Glu Glu Pro Leu Leu Ala Ala Asn Gly Thr Val Pro Ser Trp Pro
    130                 135                 140

acc gcc ccg gtg ccc agc gcc ggc gag ccc ggg gag gag gcg ccc tat      480
Thr Ala Pro Val Pro Ser Ala Gly Glu Pro Gly Glu Glu Ala Pro Tyr
145                 150                 155                 160

ctg gtg aag gtg cac cag gtg tgg gcg gtg aaa gcc ggg ggc ttg aag      528
Leu Val Lys Val His Gln Val Trp Ala Val Lys Ala Gly Gly Leu Lys
                165                 170                 175

aag gac tcg ctg ctc acc gtg cgc ctg ggg acc tgg ggc cac ccc gcc      576
Lys Asp Ser Leu Leu Thr Val Arg Leu Gly Thr Trp Gly His Pro Ala
            180                 185                 190

ttc ccc tcc tgc ggg agg ctc aag gag gac agc agg tac atc ttc ttc      624
Phe Pro Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe
        195                 200                 205

atg gag ccc gac gcc aac agc acc agc cgc gcg ccg gcc gcc ttc cga      672
Met Glu Pro Asp Ala Asn Ser Thr Ser Arg Ala Pro Ala Ala Phe Arg
    210                 215                 220

gcc tct ttc ccc cct ctg gag acg ggc cgg aac ctc aag aag gag gtc      720
Ala Ser Phe Pro Pro Leu Glu Thr Gly Arg Asn Leu Lys Lys Glu Val
225                 230                 235                 240

agc cgg gtg ctg tgc aag cgg tgc g                                   745
Ser Arg Val Leu Cys Lys Arg Cys
                245
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<210> 164
<211> 12
<212> PRT
<213> Homo sapiens

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in 1 is unknown.

<400> 164
Xaa Ala Leu Ala Ala Ala Gly Tyr Asp Val Glu Lys
1 5 10

<210> 165
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in 1 is unknown.

<400> 165
Xaa Leu Val Leu Arg
1 5

<210> 166
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> UNSURE
<222> (1)...(3)
<223> Xaa in 1, 2, and 3 is unknown.

<400> 166
Xaa Xaa Xaa Tyr Pro Gly Gln Ile Thr Ser Asn
1 5 10

<210> 167
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe/primer derived from Rattus rattus

<221> unsure
<222> (25)...(31)
<223> N in 25 and 31 is unknown.

<400> 167
atagggaagg gcgggggaag ggtcnccctc ngcagggccg ggcttgcctc tggagcctct 60

<210> 168
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe/primer derived from Rattus rattus

<221> unsure
<222> (16)...(16)
<223> N in 16 is unknown.

<400> 168
tttacacata tattcncc 18

<210> 169
<211> 21
<212> PRT
<213> Bos taurus

<400> 169
Glu Thr Gln Pro Asp Pro Gly Gln Ile Leu Lys Lys Val Pro Met Val
 1   5   10   15
Ile Gly Ala Tyr Thr
            20

<210> 170
<211> 422
<212> PRT
<213> Homo sapiens

<400> 170
Met Arg Trp Arg Arg Ala Pro Arg Arg Ser Gly Arg Pro Gly Pro Arg
 1   5   10   15
Ala Gln Arg Pro Gly Ser Ala Ala Arg Ser Ser Pro Pro Leu Pro Leu
            20   25   30
Leu Pro Leu Leu Leu Leu Leu Gly Thr Ala Ala Leu Ala Pro Gly Ala
        35   40   45
Ala Ala Gly Asn Glu Ala Ala Pro Ala Gly Ala Ser Val Cys Tyr Ser
    50   55   60
Ser Pro Pro Ser Val Gly Ser Val Gln Glu Leu Ala Gln Arg Ala Ala
65   70   75   80
Val Val Ile Glu Gly Lys Val His Pro Gln Arg Arg Gln Gln Gly Ala
                85   90   95

```
Leu Asp Arg Lys Ala Ala Ala Ala Ala Gly Glu Ala Gly Ala Trp Gly
            100                 105                 110
Gly Asp Arg Glu Pro Pro Ala Ala Gly Pro Arg Ala Leu Gly Pro Pro
        115                 120                 125
Ala Glu Glu Pro Leu Leu Ala Ala Asn Gly Thr Val Pro Ser Trp Pro
    130                 135                 140
Thr Ala Pro Val Pro Ser Ala Gly Glu Pro Gly Glu Glu Ala Pro Tyr
145                 150                 155                 160
Leu Val Lys Val His Gln Val Trp Ala Val Lys Ala Gly Gly Leu Lys
                165                 170                 175
Lys Asp Ser Leu Leu Thr Val Arg Leu Gly Thr Trp Gly His Pro Ala
            180                 185                 190
Phe Pro Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe
        195                 200                 205
Met Glu Pro Asp Ala Asn Ser Thr Ser Arg Ala Pro Ala Ala Phe Arg
    210                 215                 220
Ala Ser Phe Pro Pro Leu Glu Thr Gly Arg Asn Leu Lys Lys Glu Val
225                 230                 235                 240
Ser Arg Val Leu Cys Lys Arg Cys Ala Leu Pro Pro Gln Leu Lys Glu
                245                 250                 255
Met Lys Ser Gln Glu Ser Ala Ala Gly Ser Lys Leu Val Leu Arg Cys
            260                 265                 270
Glu Thr Ser Ser Glu Tyr Ser Ser Leu Arg Phe Lys Trp Phe Lys Asn
        275                 280                 285
Gly Asn Glu Leu Asn Arg Lys Asn Lys Pro Gln Asn Ile Lys Ile Gln
    290                 295                 300
Lys Lys Pro Gly Lys Ser Glu Leu Arg Ile Asn Lys Ala Ser Leu Ala
305                 310                 315                 320
Asp Ser Gly Glu Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp
                325                 330                 335
Ser Ala Ser Ala Asn Ile Thr Ile Val Glu Ser Asn Ala Thr Ser Thr
            340                 345                 350
Ser Thr Thr Gly Thr Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys
        355                 360                 365
Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser
    370                 375                 380
Asn Pro Ser Arg Tyr Leu Cys Lys Cys Pro Asn Glu Phe Thr Gly Asp
385                 390                 395                 400
Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr Ser Thr Pro
                405                 410                 415
Phe Leu Ser Leu Pro Glu
            420
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<210> 171
<211> 69
<212> PRT
<213> Homo sapiens

<400> 171

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Met Ser Glu Arg Lys Glu Gly Arg Gly Lys Gly Lys Gly Lys Lys Lys
 1               5                  10                  15
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Glu Arg Gly Ser Gly Lys Lys Pro Glu Ser Ala Ala Gly Ser Gln Ser
20 25 30
Pro Arg Glu Ile Ile Thr Gly Met Pro Ala Ser Thr Glu Gly Ala Tyr
35 40 45
Val Ser Ser Glu Ser Pro Ile Arg Ile Ser Val Ser Thr Glu Gly Ala
50 55 60
Asn Thr Ser Ser Ser
65

<210> 172
<211> 19
<212> PRT
<213> Bos taurus

<400> 172
Arg Lys Gly Asp Val Pro Gly Pro Arg Val Lys Ser Ser Arg Ser Thr
1 5 10 15
Thr Thr Ala

<210> 173
<211> 231
<212> DNA
<213> Homo sapiens

<400> 173
cgcgagcgcc tcagcgcggc cgctcgctct ccccctcgag ggacaaactt ttcccaaacc 60
cgatccgagc ccttggacca aactcgcctg cgccgagagc cgtccgcgta gagcgctccg 120
tctccggcga gatgtccgag cgcaaagaag gcagaggcaa agggaagggc aagaagaagg 180
agcgaggctc cggcaagaag ccggagtccg cggcgggcag ccagagccca g 231

<210> 174
<211> 178
<212> DNA
<213> Homo sapiens

<400> 174
ccttgcctcc ccgattgaaa gagatgaaaa gccaggaatc ggctgcaggt tccaaactag 60
tccttcggtg tgaaaccagt tctgaatact cctctctcag attcaagtgg ttcaagaatg 120
ggaatgaatt gaatcgaaaa aacaaaccac aaaatatcaa gatacaaaaa aagccagg 178

<210> 175
<211> 122
<212> DNA
<213> Homo sapiens

<400> 175
gaagtcagaa cttcgcatta acaaagcatc actggctgat tctggagagt atatgtgcaa 60
agtgatcagc aaattaggaa atgacagtgc ctctgccaat atcaccatcg tggaatcaaa 120
cg 122

<210> 176
<211> 102
<212> DNA
<213> Homo sapiens

<400> 176
agatcatcac tggtatgcca gcctcaactg aaggagcata tgtgtcttca gagtctccca 60
ttagaatatc agtatccaca gaaggagcaa atacttcttc at 102

<210> 177
<211> 128
<212> DNA
<213> Homo sapiens

<400> 177
ctacatctac atccaccact gggacaagcc atcttgtaaa atgtgcggag aaggagaaaa 60
ctttctgtgt gaatggaggg gagtgcttca tggtgaaaga cctttcaaac ccctcgagat 120
acttgtgc 128

<210> 178
<211> 69
<212> DNA
<213> Homo sapiens

<400> 178
aagtgccaac ctggattcac tggagcaaga tgtactgaga atgtgcccat gaaagtccaa 60
aaccaagaa 69

<210> 179
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe derived from Bos taurus

<400> 179
tcgggctcca tgaagaagat gta 23

<210> 180
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe derived from Bos taurus

<400> 180
tccatgaaga agatgtacct gct 23

<210> 181

<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe derived from Bos taurus

<400> 181
atgtacctgc tgtcctcctt ga 22

<210> 182
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe derived from Bos taurus

<400> 182
ttgaagaagg actcgctgct ca 22

<210> 183
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe derived from Bos taurus

<400> 183
aaagccgggg gcttgaagaa 20

<210> 184
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe derived from Bos taurus

<400> 184
atgargtgtg ggcggcgaaa 20

<210> 185
<211> 15
<212> PRT
<213> Bos taurus

<400> 185
Glu Gly Lys Val His Pro Gln Arg Arg Gly Ala Leu Asp Arg Lys
1 5 10 15

<210> 186
<211> 17
<212> PRT
<213> Bos taurus

<400> 186
Pro Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met
 1   5   10   15
Glu

<210> 187
<211> 16
<212> PRT
<213> Bos taurus

<400> 187
Glu Leu Asn Arg Lys Asn Lys Pro Gln Asn Ile Lys Ile Gln Lys Lys
 1   5   10   15

<210> 188
<211> 62
<212> PRT
<213> Homo sapiens

<400> 188
Thr Ser Thr Ser Thr Thr Gly Thr Ser His Leu Val Lys Cys Ala Glu
 1   5   10   15
Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met Val Lys
            20   25   30
Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys Pro Asn Glu Phe
        35   40   45
Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr
    50   55   60

<210> 189
<211> 73
<212> PRT
<213> Homo sapiens

<400> 189
Thr Ser Thr Ser Thr Thr Gly Thr Ser His Leu Val Lys Cys Ala Glu
 1   5   10   15
Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met Val Lys
            20   25   30
Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys Pro Asn Glu Phe
        35   40   45
Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr
    50   55   60
Ser Thr Pro Phe Leu Ser Leu Pro Glu
65   70

<210> 190
<211> 50
<212> PRT
<213> Homo sapiens

<400> 190
Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys
1 5 10 15
Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys
20 25 30
Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser
35 40 45
Phe Tyr
50

<210> 191
<211> 150
<212> DNA
<213> Bos taurus

<400> 191
aagtgtgcag agaaggagaa actttctgt gtgaatggag gcgactgctt catggtgaaa 60
gacctttcaa atccctcaag atacttgtgc aagtgccaac ctggattcac tggagcgaga 120
tgtactgaga atgtgcccat gaaagtccaa 150

<210> 192
<211> 11
<212> PRT
<213> Bos taurus

<400> 192
Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met
1 5 10